

new products

The items listed have been selected from among those appearing concurrently in "New Instruments" or "New Materials and Components" in *Review of Scientific Instruments*. We gratefully acknowledge the cooperation of the editor of RSI, J. B. Horner Kuper, the associate editor for New Instruments, Joshua Stern, and the associate editor for New Materials and Components, R. K. Eby.

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NMR Spectrometer

The EM-360L, 60-MHz NMR spectrometer is designed to accommodate the requirements of both research and routine analysis, with proton as well as optional fluorine and phosphorus observation. Economy of operation is achieved by use of a 14-kG permanent magnet that needs no cooling water. Power consumption is 260 W. Sweep widths from 0.2 to 100 ppm are provided and offsets are digitally

and heavily insulated permanent magnet delivers a guaranteed proton sensitivity of 30:1 and resolution 0.3 or better. Magnetic and rf shielding minimize the effect of environmental perturbations. Accessory options include a variable temperature accessory for experiments in the range -100° to $+175^{\circ}\text{C}$, a spin decoupler, including provision for spin tickling and INDOR, and a 1024-channel digital signal averager for sensitivity enhancement.—*Varian Associates, 611 Hansen Way, Palo Alto, CA 94303.*

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Laser optics

Internal-cavity laser optics that provide spectral stability up to 500°C are available. These laser mirrors and windows are said to withstand the heat of welding and fritting without degrading. Mirrors offer reflectance of greater than 99.9% with less than 0.05% scatter and low loss. Windows have typical reflectances of less than 0.01% with low scatter. The high-energy coatings are said to withstand up to 400 MW in 30-ns pulses. Standard and custom mirrors and windows are available on substrates of fused silica, crystal quartz, sapphire, BK-7, and K-5 in diameters up to 20 in.—*Optochrome, 870 Hermosa Ave., Sunnyvale, CA 94086.*

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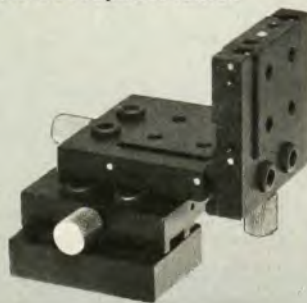
Waveform digitizer

The model 2256, 20-MHz, 8-bit digitizer samples a waveform with 25-ps time accuracy, digitizes the amplitude to 8 bits and stores up to 1024 samples for later readout. It features a 30-MHz analog bandwidth and 20-MHz maximum sampling rate. Full scale change is tracked in one 50-ns



selectable from -200 to $+200$ ppm, plus 1-ppm continuous vernier. Six sweep times, 0.5 to 20 min, and seven filter time constants, 0.05–5 s, and full continuous rf power control and provision for fast normalization of spectrum amplitude are provided. A homonuclear internal lock channel with automatic Y-gradient homogeneity adjustment is included. These features automatically correct for any tendency of field strength or Y-gradient resolution to drift from optimal settings. A built-in integrator provides for quantitative analysis work and allows for rapid normalization of the integral display and for holding the integral reading at any point of the total scan. The temperature-compensated, thermostatted,

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NEW CATALOG



This greatly expanded catalog is packed with useful design information and application notes. Product categories include optical, mechanical and electronic components/instruments for electro-optics, laser and holographic applications. Write NRC, 18235 Mt. Baldy Circle, Fountain Valley, CA. 92708 or call 714-963-9811.

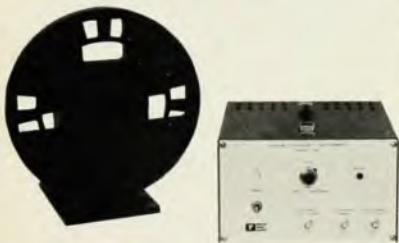
NRC newport research corporation

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new products

sampling period. The instrument is capable of continuous display and can retain information present prior to the decision to record. Sampling frequency can be varied to emphasize time regions of interest. A 1024 data point readout is provided on a real time oscilloscope for visual analysis. Computer readout conforms to the international CAMAC standard defined in IEEE standard 583 and interfaces are available for a variety of computers.—*LeCroy Research Systems, 1 First St., Los Altos, CA 94022.*

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Photomultipliers

Six new head-on photomultiplier tubes of 1/2- to 1 1/8-in. diameter, use MgF₂ window material for shorter cutoff and low solubility. The cutoff wavelength is about 115 nm, which makes it possible to detect Lyman alpha radiation.—*Hamamatsu Corp., 120 Wood Ave., Middlesex, NJ 08846.*

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Temperature controller

The model 301011 temperature controller offers automatic three-term temperature control from 1 to 2300 K with stability 0.01 K. In operation, a chopper dc amplifier compares output voltage of the sensor with a stable dc reference for correction in proportional, integral, and derivative power terms. Remote program input can be used for linear increase or decrease of temperature. Program input can be adjusted from 0 to 5 V, positive or negative. The differential term may be preset 0 to 8 min; the integral term may be preset 0.5 s to 15 min. Variable overall loop gain and reference voltage range is compatible with a range of sensors, including germanium, carbon, or strain gage sensors, gold-iron/Chromel, copper/Constantan, or platinum/platinum-rhodium thermocouples, and gallium arsenide and silicon diode sensors. Cryogenic and high-power outputs up to 2 kW are standard. Selectable power outputs 19, 25, 33, or 40 V offer up to 40-W power. For furnace, process control, or high-power cryogenic applications, the controller delivers 0-250 rms at 8 A.—*Superconducting Technology, 1400 Stierlin Rd., Mountain View, CA 94042.*

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X-ray spectrometer

The Alpha-X spectrometer for quantitative analysis for elements in thin films and surface layers utilizes 5-MeV

alpha-particle-induced x-ray emission, windowless detector cryostats, and radioisotope source collimator subsystems to provide nondestructive quantitative analysis of elements of atomic number 6 and higher. Carbon and oxide layers less than 15 Å thick are

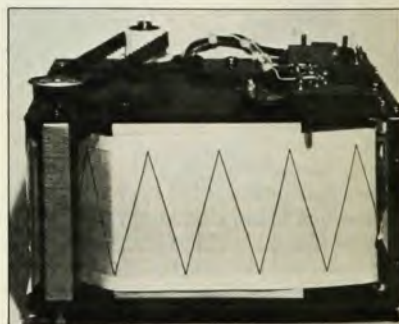


said to be detectable by the system. The spectrometer is offered in two configurations: integrated, stand-alone systems, and attachment or accessory surface analyzers. The accessory version may be attached to existing Auger/ESCA type surface analysis chambers to yield complementary information. The stand alone system is capable of both surface and bulk material analysis.—*Keve Corporation, 1101 Chess Drive, Foster City, CA 94404.*

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Recorder

The model 102xLA DCH single channel, battery powered OEM recorder is designed to perform accurately despite the drop off of battery voltage



and changes in load. The recorder is said to regulate chart movement within 2% of the set speed and to control gain of the galvanometer to better than 1%. Monolithic regulators control the output to the motor and control board and galvanometer. A battery voltage from a peak of 13.9 down to 10.5 V, almost depleted, will not affect the

operation of the amplifier or the chart paper speed. A tachometer output on the chart motor drive is fed through a feedback circuit to effect constant chart speed regardless of the increased load that occurs as the paper roll diameter decreases. Low power consumption, 6 W, is permitted by the low drain of the position feedback galvanometer that provides over all accuracy 1/2% of full scale. Channel width is 50 mm; writing is on thermal paper.—*Astro-Med, Altlan-Tol Industrial Park, West Warwick, RI 02893.*

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Surface thermocouples

Coaxial surface temperature probes that measure rapidly changing metal wall surface temperature from -300° to +3220°F in engine combustion chambers, bearings, die casting dies, gun barrels, laser targets, aerodynamic models, and apparatus for heat transfer models are said to provide 1-μs re-



sponse while being extremely rugged. The thermocouples are available in a variety of configurations, including a probe diameter of 0.015 in., and in the standard ISA calibration codes: T, J, E, K, and S. The probes are coaxial thermocouples consisting of a small wire of one thermocouple material coated with a 0.0005-in. thickness of ceramic insulation of high dielectric strength, swaged in a tube of a second thermoelectric material. The insulation resistance between the wire and the tube is said to be effective to higher than 2000°F at steady state and higher than 3000°F for transient temperature. The thermocouple junction is formed by vacuum deposition of a metallic coating one or two micrometres thick over the sensing end of the probe, forming a metallurgical bond. A variety of mounting configurations and transition pieces for lead wire connection may be installed on the coaxial probe assembly.—*Medtherm Corporation,*

Box 412, Huntsville, AL 35804.

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Laser noise reduction

The model 307 is an electrooptic feedback loop designed to improve the signal-to-noise ratio of visible light lasers. The system employs a transverse field, electro-optic modulator in a dc coupled, broadband feedback loop to improve the amplitude stability of the laser and attenuate line ripple and plasma noise variations. The system provides 100:1 attenuation at dc, 20:1 at 1 MHz, and has a unity gain crossover at 10 MHz. The system requires no electrical interface with the laser, consumes approximately 20 W, and weighs 25 lb.—*Coherent Associates, 42 Shelter Rock Rd, Danbury, CT 06810.*

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New Literature

Optical polishing—A 6-pp. folder describes and illustrates the Logitech precision optical polishing technique and equipment for production of thin crystal, ceramic, and rock and tooth and bone sections to 20 Å flatness with automatic parallelism control to one second arc.—*Hacker Instruments Inc., P.O. Box 657, Fairfield, NJ 07006.*

Power supplies—A 28-pp. booklet, "Power Supply Interface Guide," describes several alternative methods to control dc power supplies with voltage ratings from 0-600 V and power ratings from 20 W to 11 kW, using the HP-1B interface bus.—*Hewlett-Packard Company, 1501 Page Mill Rd., Palo Alto, CA 94304.*

Ramp generator—A 2-pp. data sheet describes the model RC-42 ramp generator that provides control of 3-element PZT devices with output 0-1000 V from 0-1000-V dc offset, slope trim controls that provide 0%-15% attenuation to each of the 3 channels, dc alignment capability 0-250 V, and ramp rates adjustable from 20 ms to 18 min.—*Burleigh Instruments, Inc., 100 Despatch Drive, Box 270, East Rochester, NY 14445.*

Photon Detectors—Collection of three reprints on photon detectors are packaged in this 30-page brochure. These articles discuss applications of lead selenide in pollution detectors (3 to 6 micron) lead sulfide applied to various applications in the 1- to 4-micron region, and unique packaging configuration for silicon photo-detectors including "in-line" two-color designs.—*Infrared Industries, 62 Fourth Avenue, Waltham, Ma. 02154.* □

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